

# Main Currents

IN MODERN THOUGHT

April 1942

Port Chester, New York

Vol. II, No. 6

F. Kunz, Editor and Publisher

## THE DISCOVERY OF THE WHOLE

Editorial Note

The following significant passages will be of considerable interest to our readers. They are summaries made by L. A. Lafleur of articles by the various authors and in the several places cited, and appear in Biological Abstracts, February, 1942. In general, the emphasis is upon the whole, without which the parts cannot be understood. But each citation provides some specific item explanatory of the manner in which the One contrives to be at the same time the Many. For this reason the group of five following paragraphs is especially significant, for they show how the tendency is increasingly common today to come to grips with this premier problem in thought, the One and the Many, so successfully grappled with by Indian thinkers. We presume to identify the specific meanings in the more important bearings for our readers.

In the first paragraph Dr. Lillie traces the causative source in organisms back into mind, giving materialistic notions both in physics and in biology their due, but pointing out that organisms are causative systems, not only self-sustaining (if merely that they would be explicable in terms of physics) but also self-sustaining while at the same time capable of spontaneity or origination. We may conclude therefore that the argument carries causation back into mental or ideal domains. The general word mind is here employed to describe that domain. If causality is organized at any level, it must be a mental level. In the second paragraph Dr. Malisoff brings forward very cautiously---all too cautiously, in view of the fact that we humans know anything at all by reason of introspection!--the notion of the Monad. These atomic entities, with a sense of private being, must be conceived as being the core of mind. There is ample proof in gestalt experiments that self-consciousness is deeper than mind, for the sense of meaning can be observed to change although the sense data do not change. In the article by Dr. Bentley, on the amusing title, "The Human Skin: Philosophy's Last Line of Defense", the final step is taken by denying that an organism is cut off from its environment in any essential way. It is astonishing that this has to be pointed out at all, but so confused was thought in the days of behaviourism that perfectly self-evident facts authorised furthermore by the whole weight of electronic physics were by-passed. Dr. Bentley is in essence in agreement with Dr. Gustaf Stromberg, that the organism (which at bottom is mind, in turn assembled upon, and perhaps by, a core of self-consciousness) is an integrated part of the field common both to organism and environment. We thus arrive at the idea that Monads and atoms are really the same thing, which means that everything is alive and everything in some sense conscious, though perhaps only in man egotistically self-conscious. This leaves unresolved the problem of how some atoms or Monads appear to be self-consciousness and others appear to be matter, but this is a secondary problem involved in the sense of isolation which mankind displays. However, it leaves us with immortality for monads, since they are one with the whole.

The remaining paragraphs fortify various aspects of the argument which forms, as a whole, a strong reason to say that the tendency today in biological thought, as in world affairs, is toward the sense of the whole, and that whole spiritual. Our readers will feel a keen sense of obligation to Dr. Lafleur for bringing forward from diverse sources such significant items. The sources are credited at the end

of each paragraph. Current items on origination, variation, etc. conclude our biology section. F. K.

The problem of causation is less discussed and more difficult in biology than in physics. Probably this is because physical sciences can deal with changing events within a "machine" or system which is itself almost completely static. In biology, on the other hand, these two factors merge, and the "machine" degenerates into a steady state which is the product of anabolism and catabolism. In addition to being a physical system, the organism seems to have an additional factor of inner or volitional determination, of which behaviorism can give only a partial account. Organisms are causal systems, combining the maximum complexity of organization and activity with an equal degree of constancy and reproductibility in extremely complex biological and psychological traits, and continually resisting the thermo-dynamic and chemical tendencies which tend toward the destruction of complex fine-grained systems. Since analysis reveals the complexity of the system but fails to give a satisfactory account of its unity, it seems probable that biology is destined to become more and more a science of synthesis. The constants of synthesis, whether in the field of biology or psychology, cannot be wholly reducible to the physical constants, and physical atomism must be taken to be an abstractional procedure thoroughly warranted by the facts but not completely descriptive of observed reality. The synthetic factor may be identified as mind, and the organism as a whole as a psychophysical system. Biological stability is predicated upon physical stability, and biological causation upon universal causation. If novelty appears in the world, it cannot be accounted for in the rules previously existent, but must require new rules. The necessity for variation in biology is for something new, and from this demand there is no escape in the attempt to assign definite causes to biological mutation. There would seem to be no escape from the ascription of a certain variable element of spontaneity to natural processes in general. (A summary by L. A. Lafleur of an article by Ralph S. Lillie, University of Chicago, on Biological causation, in *Phil. of Sc.* 7 (3) 314-336. 1940)

In addition to atoms and genes as described by the author in other articles, the world may possibly contain entities having private character and the capacity for introspection, such entities to be called monads. Illustrations might be Driesch's entelechy and psychic phenomena, as well as such things as mind, soul and spirit. (L. A. Lafleur summarizing an article by Wm. Marias Malisoff, Brooklyn Polytechnic Institute, *What is a monad?* *Phil. of Sc.* 7 (1): 1-6. 1940).

The assumption that an organism is cut off from its environment, as by an entity such as the skin, is false and a relic of pre-scientific thinking. It vitiates most of philosophic thinking, particularly in epistemology, and much of biological and psychological, especially in the use of such attitudes as those of the physiological psychologist, and in the idea of internal environment. The proper approach to the problem of knowledge treats it as a specialized type of response within an integrated organism-environmental field. (L. A. Lafleur, summarizing Bentley, Arthur F. *The Human skin; philosophy's last line of defense.* *Phil. of Sc.* 8 (1): 1-19, 1941).

In connection with the problem of vitalism vs. physicalism, the latter understood as meaning the possibility of deriving the laws of any science from the laws of physics, it is of interest to see if it is possible to give at least one mathematical model for a non-physical term. The author finds it possible to present a mathematical system where certain variables may be stated to depend upon others while the inverse relation does not exist, and concludes that this may be used as a model for gestalt and teleological systems. (L. A. Lafleur summarizing Bergmann, Gustav, State University of Iowa, *On physicalistic models of non-physical terms.* *Phil. of Sc.* 7 (2): 151-158. 1940).

The assumption that a mechanistic view of nature is no longer possible depends upon the confusion of two terms. Mechanics is not invalid, but only a classical form of mechanics which is itself rather limited in scope than displaced by more modern forms. Mechanism may be true even if we accept a principle of uncertainty or grant a vital principle unlike anything found in non-living matter. The author apparently uses "mechanism" to mean what is more commonly designated as "determinism." L. J. Lafleur summarizing Turner, J. E., University of Liverpool, The distinction between "mechanics" and "machanism". Phil. of Sc. 7(1): 49-55. 1940).

#### DROSOPHILA AND SPECIATION

Extracts

In an address as retiring Vice President of the Section of Zoological Sciences of the A.A.A.S., Dr. J. T. Patterson, Prof. of Zoology of the Univ. of Texas, drew conclusions with regard to the origin of species, drawn from experiments on *Drosophila* (fruit flies).

...."until recently we did not have experimental proof of the exact method by which a given animal species might have arisen among wild populations." ...."with the rediscovery of Mendelism, there followed a very rapid development in the fields of cytology and genetics, with the early deduction that chromosomes and hereditary factors could be definitely correlated." ...."Muller's demonstration that X rays could be used as a means of inducing mutations and chromosomal arrangements.... Painter's development of the salivary-gland chromosome technique [and] ...the application of mathematics to the problem of evolution"... [are the technical methods indispensable for analysis of the problem of the origin of species.]

Experiments, ..."on the relation of environment to evolution especially on plants ....show that while environmental factors can induce modifications in phenotype, yet they do not change the genotype." "Attempts to solve the problem of origin of species were attacked by genetic and cytological methods in a sexually reproducing diploid organism like *Drosophila*." "There are at least four detectable mechanisms present [to account for the differentiation of species]. These are sexual isolation, hybrid sterility, a sex chromosome unbalance and the passive factor of geographical separation." "....various types of isolating mechanisms are present either singly or in combination among the different groups [of *Drosophila*]. Their net effect is the partial or complete elimination of the exchange of genes between populations." "It is no longer necessary to explain evolution by analogy, for the application of genetical and cytological techniques in this genus proves that it depends on experimentally measurable gene mutations." (Science 95, 153-9, Feb. 13, 1942. A. J. P.)

#### YEASTS AND PEOPLE

Extracts

In the Third Cantor Lecture on Brewing, recently delivered to the Royal Society of Arts, Mr. A. J. Curtin Crosbie discussed the nature of yeasts, their function in brewing and how a pure strain of yeast sometimes shows signs of degeneration without apparent cause. Yeasts reproduce their kind by two processes, by budding and by the formation of spores. The latter method may follow conjugation of two separate cells, which is the process followed by true yeasts as opposed to wild yeasts. In these yeasts reproduction takes place by the fusing of two cells into one. The cell then grows by budding. Depending upon which process is followed, there may be formed two kinds of descendants the one containing single chromosomes in the cell nucleus and the other containing pairs of chromosomes. Inbreeding degeneration has been noticed by those who year after year have relied upon one pedigree herd of yeast cells and long experience and much patience are required to restore activity to a variety of yeast which has become lazy because an ample supply of food was

found for it, competition was prevented, and starvation never stimulated the breed to work hard for its living. (Editorial, Chemistry & Industry, 60, 901-2, Dec. 7, 1941. This appears to be another case of "if a man will not work, neither shall he eat", similar to Plants On The Prowl--MAIN CURRENTS, June, 1941, p. 7-8. A.J.P.)

#### INHERITANCE OF EMPHASIZED CHARACTERISTICS

#### Note on Adaptation

In a discussion on Advances in Entomology, C. H. Richardson of the Iowa Agricultural Experiment Station states that a striking example of change in the characteristics of an insect population brought about by application of insecticides over a period of years is afforded by the development of a resistant strain of the California red scale *Aonidiella Aurantii*. In an endeavor to reduce the scale population to safe levels, orchardists have created strains of red scale so resistant to hydrogen cyanide that they can no longer be held in check by the older methods of fumigation. This resistance appears to be inherited and depends on a single gene or a group of closely linked genes in the X chromosome of the insect and is sex-linked. Scale populations which were formerly controlled by hydrogen cyanide fumigation probably contained individuals in which this factor for resistance was present. The proportion of resistant individuals has gradually increased and will continue to increase until a nearly pure strain of resistant insects is established. (News Ed. AM. Chem. Soc. 20, 251, Feb. 1942. A. J. P.)

#### CRYSTALLINE SOLIDS AND LIQUIDS

#### The Philosopher's Stone

"Ghosts" of ice lurk in water and all liquids have some slight residual structure which is like a memory of a former crystalline state, according to Dr. John G. Kirkwood of Cornell University. When a solid melts, each molecule in the liquid tends to retain some of its former neighbors about it. Glass is regarded as an undercooled liquid that failed to crystallize on solidifying, while some crystalline solids may show plastic flow at high temperatures. The real distinction is in the "degree of orderliness" in arrangement and distribution of molecules. In the crystalline solid the degree of order is high and extends over wide domains. In the liquid it is slight and confined to local groups. Nevertheless some remains, both in liquids and gases. (Science Supplement 95, 10, Mar. 13, 1942. A.J.P.)

#### SUPERSONIC HEARING

#### A Note on Bat Hearing

The mechanism by which bats are able to avoid obstacles has been worked out by D. R. Griffin and R. J. Galambos of Harvard Univ. They state that bats avoid obstacles by emitting notes of supersonic frequency and interpreting the reflected sounds they hear. Other senses are said to play a minor part. (Journal Expt'l Zool. 86, 113, 1941. Supersonic notes are air waves of frequency too fast for the human ear to detect. Dogs and other animals detect some supersonics. A. J. P.)

The failure of the Cripps mission was not as complete as some people suppose. The main general cause of the failure is deep-rooted suspicion, mutual distrust. Sir Stafford did much, relative to the length of his stay, to dispel suspicion, and the record of Britain's intention is strengthened. In that sense the effort was a success. It was bound to fail in its main object as a political venture, because it was predicated upon the assumption that religious beliefs have standing in electoral procedure. This principle was first accepted by the British government in India in 1906. It is evil. The Congress-League scheme of the Lucknow Congress, 1916, was intended to avoid this very problem, among others.

We shall not be able to appraise until later the immediate causes of the failure of the mission, except that they hinged more upon the immediate question of defense than upon the method of implementing the final stages of India's freedom. It appears that all Indian groups wanted the Defense Minister to be an Indian with large powers as regards recruitment, and much else. We have not seen any report that demands were made for control over strategy. Perhaps it is just as well that the major cause for the breakdown of the discussions was such an item as this, as far as future resumptions go.

Meantime reports have been received that Indian leaders, among them Jawaharlal Nehru, have begun serious efforts at recruiting. This is good news, if true. Nothing would serve the purpose of India and the world better than for the Indian leaders to unite---no one can say they are really united---under this Japanese threat, arrange their own terms for assuming all responsibility at the close of the war, and generally act as if dominion status is fait accompli. In a radio discussion recently Sir Wilmot Lewis said that it was the proper procedure for Indian political leaders to take their freedom, not to ask for it. Britain, in essence, cannot give India her freedom. There is nothing whatever to prevent the Congress, which represents all parties, even now after losing so much of its strength in recent years, from setting up the standard upon which representation to a Continental Congress for constitution-making is to be called. Is there anything to prevent discussion between leaders like Nehru, Gandhi, Jinnah, Jayakar, Sapru and others, meeting in the same room, of the general outlines of a constitution? There is nothing whatever to prevent the preparation and publication of such proposals---nothing, that is, except the same old problems which harass mankind all over the world, and are within this war---problems of a decaying old order, economic unreality, human ambition and greed, inequality of wealth and of opportunity. These, of course, exist within India, as everywhere else.

And in this situation is an opportunity for Indian leaders to save humanity. For if they meet to create a new constitution they can write into the draft the procedure to realise an economic democracy, which provision has been omitted from the Constitution of the United States. The very fact that a change is to be made in India is the opportunity to learn from our American limitations. For let us make no mistake: the winning of the war, difficult as that is to be, many think, is nothing compared with the problems involved in settling world-wide economic issues after the war is over. Some people in this country (at least) look forward to military struggles against Russia when this war is over. What a scene! Instead of grappling with the unsolved problems, of which starvation amidst abundance and widespread unemployment were mere symptoms, these benighted persons are ready to pull the whole of western society down in order to destroy the one nation which has tried to grapple with root economic problems---the one European nation which has saved us from the Axis by its valor and its preparation in good time, the nation which tried its best to settle these problems through the League, the one nation which has been as plucky as Britain herself in facing up to the Axis on the battlefield! Here is India's opportunity; and if the delay in her moving on to freedom allows her to take this opportunity, then the mission of Sir Stafford Cripps is no more a failure than Dunkirk was a failure. F. K.

We have received for review the second volume on Science, Philosophy and Religion in Relation to the Democratic Way of Life, being the second Symposium conducted by a group of men and women at Columbia University, September 8, 9, 10 and 11, 1941. This is the most important conference proceeding in the United States for our purposes, and the marked advance made in this, the second session, is extremely heartening. When we contrast this standard of discussion with the futility of most radio forums, debates and the like, we are as much encouraged by the one as we are depressed by the other.

Our review of the first volume of the Symposium will be found in MAIN CURRENTS of January, 1941. The present volume is much later than the first in calendric appearance, but the matter in it is also greater in all senses of that word, and the conductors of the Symposium are very busy people. We shall dispose of a wholesale negative criticism here at the beginning, so that we can end upon a constructive note.

It is astonishing to find no serious references to the thought of the orient. There are in fact almost no discussion of the values and cultures of India and China at all, and what glancing notices these get (as on page 132) are slight, even disparaging. Plenty of good opening for at least some friendly notice of these ancient societies and their values occur, as on pages 39, 42, 43, 47 and the like. One address is devoted to the Talmud, another to the Old and the New Testaments, still another to New Testament ethics alone in a discourse which mentions Christianity many times on nearly every page. We must put it to the parties responsible for this valuable venture, do they seriously mean to attack the problems of a world settlement in this state of mind and expect to succeed? We took exception to the scope of the work on this ground and because it omitted adequate place for art, along with philosophy, science and religion, in reviewing the first volume of proceedings. The omission of art has been remedied, but the situation as regards Eastern thought has worsened, not improved. It is impossible to believe this is deliberate, and therefore it can only be laid to the total philosophical blindness of our times, from which recovery is going to be extremely slow. We address ourselves to the secretaries as regards next year: Can they find a way to make room for a statement, at least, of the grand nexus of Indian philosophy and ethics, as a change of point of view from the pretty sterile and trampled ground the discussion now occupies? How do they propose to help bring about a peaceful world with the notions of half of humanity disregarded? Can we settle problems as between Jews, Christians of all kinds and agnostics without attending also to Islam, Hinduism and Buddhism?

This matter is all the more urgent because of the quality of the anthropology section and the friendly and understanding references to more primitive cultures by Dr. Margaret Mead and others. Where do India and China stand in relation to such societies, in the minds of these extremely intelligent and responsible people? One wonders whether the majority of them are acquainted with the Indian Darsanas, with the profound depth of Buddhist psychology, and the like? Specifically, have they heard of Nyaya and Vaisheshika, Sankhya and Yoga, Purva and Uttara Mimamsa? I shall venture to say that the answer will be no in effect, because the assumptions and main problems revealed in these pages would not be there if the prior work in philosophy done by orientals had been put into circulation at the first conference, or raised in a circulated paper subsequent to it.

It would be interesting to know whether the following remarks (pp. 46-47) by Kenneth V. Thimann (which are the nearest thing in the volume to the Eastern state of mind) come from a background which includes oriental thought or not. "Professor Hoagland puts forward the view, common to most thinking scientists, that we can have no direct knowledge of reality because we experience only the properties of our nervous systems. This statement makes the usual presumption that reality is some-

thing external, to be apprehended through the senses. It seems to me, however, not at all improbable that realization, as opposed to knowledge in the Machian or sensual sense, is something internal, to be reached only by some contemplative or meditative process. The mystic who simply focusses his attention on the eternal, and claims to be able gradually to realize at least some inkling of it, may have access to a different method from that of the more extroverted scientist, who focusses his attention on the evidence of his senses. Furthermore, since many mystics have emphasized that with sufficient practise this realization can be achieved by anyone, it would not seem to be, as Professor Hoagland indicates, 'unsharable'. It is true that it is hard to define, and as impossible to describe to one who has not experienced it as the sensation of light would be impossible to describe to a blind man. Nevertheless, we scientists should not, in the absence of any personal experience of this sort, exclude it in others. For a successful mystic, this realization, though he cannot give it to anyone else, would be religion. For a scientist, similarly, his work takes the place of religion, although it is not a kind of religion he can impart to others. It is merely that the fact of being already engaged in the search for truth takes the urgency out of the need for organised religion. The professional golf player, though his game may be much better, has lost something of the excitement of the game which captures the enthusiasm of the amateur. In my own experience this has been very clear; as my interest in science and my understanding of it deepened, the urge for religion gradually faded away. Science, as Professor Hoagland points out, is not a substitute for religion. The mountain of facts, theories, and even the esthetically satisfying general laws which comprise science, cannot take the place of religion for a layman. But the experience of working in science to a certain extent does. This is not an experience which can be convincingly communicated to others, and the bare statement of it may seem just as bald as the statement of the mystic that 'I and my Father are one'.

We turn now to the principal dilemma which remains unresolved by the Conference. We shall cite brief passages to show how the minds of some of the participants run in relation to it. Naturally the whole context should be consulted, in order to see the high order of intelligence and moral purpose and intellectual honesty at play. Karl Herzfeld, of the Catholic University of America, in a paper of great clarity and stimulation, assumes the eternality of some aspects of the cosmos and the changeful nature of many human ideas and rules. "The difficulty consists in allocating a particular idea or rule to one of the two categories....The mediaeval synthesis started to break down in the fourteenth century. It had achieved its unity by developing particularly the 'permanent group' of ideas in theology and philosophy. But it had, of course also to assimilate a large number of transient things, contemporary ideas about the material world, a society based upon the economic situation of feudalism. When the 'new knowledge' showed these transient accretions untenable, the contemporary representatives of the 'philosophia perennis' claimed them nevertheless as belonging to their system, with the result that the system as a whole fell into disrepute." Here is posed the problem: how do we get a synthesis round the eternal truths again for our time, with our ephemera of capitalism and mass production etc., brought into subservience to them? Our speaker goes on: "Today, the idea of natural law in political science and jurisprudence is widely disregarded outside of Catholic circles. As a result, the State is often considered supreme, not subject to any higher rule, and any law is considered justifiable. The moral and political anarchy in which we live is the natural outcome of an attitude which does not admit the existence of permanent truth and unchangeable moral law." On page 41 Howard Chandler Robbins raises much the same question, and says that relativity in ethics lies at the root of totalitarian ideology, as it indeed does. The State is to decide what is right and wrong. J. Seelye Bixler says, page 45: "The real question, then, is whether knowledge of values and their source is possible."

Some participants resisted the claims of contemporary science to determine values,

yet had no higher ground to offer on which heart and mind might meet. Mark Brobard illustrates this point admirably (p. 46):

"The majority of scientists, I believe, accept Dr. Hoagland's definition that 'Science is merely the sum total of acceptable techniques for gaining evidence,' and then set out to apply this method, which is all they claim science to be, to religion, ethics and values. The question, 'Is this a correct procedure?' presents itself. Is it not rather analogous to the case of a pedantic physician who views all relations between man and woman as sex because he is only concerned with physiology and understands nothing else, and therefore terms all sentiment usually involved as superstition, ignorance or tradition? Scientists view religion in the same light. It never occurs to the scientist or the physician that perhaps before passing decision on the folly and superstition of humanity it might be better to study its behaviour. Perhaps religion fills a need which has nothing to do with a desire for accurate knowledge, just as love paints the chosen one in unrealistic colors. Moreover, as observers from the outside, we know that the one in love is in no position to be realistic and critical. Is it possible that the person who finds that religious sentiment and philosophy are an excellent vehicle for his emotional attitude to man and the world does not care to check the truthfulness of each element of his creed any more than a poet cares about literal exactness of his images or similes? It is the unreality of poetry, its imaginativeness, that heightens its beauty. Similarly, may it not be that it is the idealism and symbolism of religion that heightens its appeal? If that is so, is not the approach of scientists irrelevant and false?"

These quotations are enough to show how the problems of the Conference center on its failure to take practical steps, first, to unite the disciplines of science, philosophy and religion before tackling the democratic way of life. Democracy is the free union of individuals, who are to agree on a social procedure while they remain free persons. It is evident that a union upon ideal principles is necessary, and just as our American Constitution omitted references to economic democracy and left us a problem to solve today, so also the development of science since the days of the founding fathers has posed new problems of human solidarity for the mind which have to be achieved before democracy can work. We must have a synthesis of science with religion, philosophy aiding and art profiting, before we can go on.

We presume now to make two specific proposals aimed to assist in a solution of this central dilemma: How shall science and religion, head and heart, be united? We believe this must be achieved before their relation to the democratic way of life can be very successfully discussed. We write on the assumption that the members of the Conference do not propose to admit defeat by saying that reality can be reached by way of subjective experiences by themselves alone (mysticism); nor defeat through abandonment of religion in favor of science (positivism); nor defeat by using a merely intellectual philosophy which puts heart aside and thus leads to partition.

We propose, first, that the pre-occupation of the religious members of the Conference with a Personal God or impersonal Law as Deity---either by itself alone---be questioned. A process agreeable to both the religious and the scientific types is proposed, namely, that man be taken as the nearest physical entity approximating to divinity known by us in the waking state, and his relation to law be studied with a view to showing that personality and law do indeed exist obviously together. Man is part of Nature, and yet apart from Nature, for he must obey while he uses her laws as no other creature can, because he is a selfconscious personal (soul-having) entity. He is a person, and yet he is part of the whole. Why can we not have the idea of a personal God who is part of the whole Cosmic process, just as man is personal and yet part of the process, and in some measure a god over physical laws? So long as we stick upon the notion of deism as personal only, or cold and abstracted law as the only kind of God, we make an unnecessary and impoverishing choice. (This useless dichotomy has long ago been solved by Sri Shankaracharya). The

moment we declare valid the search for a personal type of final centralised power for any system, such as the solar system, lying in a greater matrix of universal order, we make room for the workings of mysticism and science, on an equal basis.

The second proposal we would make is that the technique which fits religion and scientific types is mathematics---the mathematics of order, to be specific. The reason why Dr. Thimann's remarks above quoted ring so true is, I believe, because he has as a scientist come to rest in that profound peace which comes from knowing that harmonic order rules the system in which we live. He needs only to know that that order exists, without knowing all its details, to have a confidence which supplants in some measure the ordinary kinds of faith. This is the state of mind and heart described in the Buddhist canon as that of a person who no longer has any doubt or uncertainty of the goodness and universality of law (*vichikichcha*, in the Pali). What we desire to assert here is that it is perfectly easy, using contemporary data, to extend vastly the knowledge of this order, to know of God as a geometer and an architect who employs eternal properties of space-time in working with matter and revealing life. The mathematics in question is such as spherical harmonics, which unites the laws of music with those of electricity and the flow of heat, developed by Legendre and others. The properties of space revealed in crystals is another. Plato had a keen intuition of this in the *Timaeus*, and we recommend the study of the regular order of time-space (that is, the fourth dimension) in which events are held and in which they move systematically, to these distinguished men and women, so that the principal dilemma of the conference be resolved in part before its next session is called. The physicists are concerned with averages in Chaos (matter), the biologists with Cosmos (life and order), and the psychologists with Logos and all the problems of personality and language (Logos is word and speech is man's mark). If religionists are to unite these disciplines they have to call on philosophers to help them, and they themselves will have to submit to a revelation that all three aspects of the universe---Logos, the Father, Cosmos, the Son, and Chaos, the Holy Ghost---are but aspects or appearances of the One, so well described by Indian thought as Brahman, the source of Brahma, Vishnu and Shiva. When this first unity has been achieved, using modern mathematical techniques, and tracing out the supremacy of order in physics, biology and psychology, moral law and natural law will come to be seen as one, as they were seen before, but now on a higher level and for our times.

Let us hope that before the next session steps will have been taken to circulate a paper upon the short cuts available from older thought, and a paper upon the principles of order in nature. The bearing of all this on a democratic social order, and upon the immanent meeting of East and West, is then a relatively easy second step. F. K.

SCIENCE, PHILOSOPHY AND RELIGION, A Symposium, issued by the Conference on Science, Philosophy and Religion in Their Relation to the Democratic Way of Life, Inc., edited by Lyman Bryson and Louis Finkelstein, 3080 Broadway, New York City, 559 pages. price not given.

A review of progress in psychiatry during 1941 appears in the American Journal of Psychiatry for January 1942, and full abstracts have generously been prepared by our own source reader. From these we here publish material of more general interest and, in accord with our custom, file the remainder for reference later, as their particular subject matter may come to the fore through future developments of special philosophical significance. At the end of this, the psycho-biological section of MAIN CURRENTS, will be found a review of an important book by Dr. Andras Angyal upon The Foundations for a Science of Personality, which volume is characteristic of the study of the mind at this stage of knowledge, and helps to correct the necessarily narrow preoccupation of specialists such as psychiatrists with pathological states, and with the physical bases of such states. The problem of the practicing psychiatrist is summed up in the words: What can be done to help this person? A belief that the human personality is both physical and supra-physical is not a practical instrument for the clinic, as of today, because the laws of the supra-physical part of the psyche are not well enough known. Hence psychiatry must appear to the intelligent layman (as it is) over-physical in emphasis in that one science which should above all be attentive to the subtle, inner portion of the individual. But the cure for this situation is to be offered by those who specialise in the reality of the superphysical. Only when proof positive and final is offered for the objective reality of the human atmosphere or psychic personality can the psychiatric clinician be expected to follow the lead. He may surely be held responsible if, as a private thinker, he fails to follow such leads as do exist, declining out of prejudice to read or observe what is now known. But he is not to be blamed for his professional conservatism, we must all admit, however impatient we are to see much more influence granted the concept of the so-called normal, healthy person, physical and psychic, in all forms of medical practice. "Psychoanalysis", says a correspondent, "is still on the outskirts of psychiatry though it has an official section in the American Psychiatric Association". Much further out on the periphery is any conviction that man is a superphysical organism, parallel to, but also superior to, the soma.

The paragraphs on care of the mental sufferer at home (extramural) reveals incidentally the vast increase in mental afflictions, and the need for action at the root of this class of disability, despite progress in therapeutics. Our President's goal of four freedoms, when realised, will affect humanity beneficially in a large way, but religious freedom and freedom from want and from major fears alone are not enough. Domestic conflicts and great areas of ignorance in the sciences and woefully weak philosophical co-ordination will remain. At bottom the major troubles of western man await new educational developments, which in turn await achievement of a good over-all philosophy. Only world-union in peace, which will give back to us human solidarity in space and as to temporal cultural gains, can serve the purpose of man. F. K.

## GENERAL CLINICAL PROGRESS.....

.....In Psychiatry 1941

The review of the above topic was made by Dr. Nolan D. C. Lewis. Dr. Lewis, aged 52, has been the Director of the N. Y. State Psychiatric Institute and Hospital, 722 W. 168th Street, N. Y. C. since 1936. His early training was in pathology, but he has gained recognition in clinical psychiatry and research. He prepared the volume, Research in Dementia Praecox, for the National Committee for Mental Hygiene in 1936.

Abstract: "An attempt to formulate a new classification of personality qualities has been made by Ichheise. These qualities are grouped as real, pseudo, and sham (Character and Personality 9:218, 1941). According to this author the real quali-

ties are those which belong to the immediate equipment of personality and which exist independently of the individual's situation. The sham qualities are attributed to an individual only from the viewpoint of others; they are not inherent in him. The pseudo qualities are those correlated with certain social situations; they are 'lent' on the part of society but disappear when the situational component is exhausted -- they are borrowed qualities. The human personality is as it is, not only because of these three qualities, but also because their existence is ignored."

"The catatonic process has been studied by Sprague and a 'force concept' formulated (Psychiatric Quarterly, 15: 327, 1941). The catatonic process is seen 'When an individual develops some notion of a force or power whose nature is not well understood, yet with which he senses some disruption of his personality integration; a considerable regression may occur leading to a partial or complete preoccupation with forces and powers as such. This is catatonia, which, focusing upon power apart from its ordinary practical associative connections, may be evidenced in varying mixtures of muscular and ideational symptomatology.'"

"....visual hallucinations alone have no localizing value in diagnosis" according to evidence by Weinberger and Grant (Archives of Ophthalmology 23:166, 1940).

"They appear to be highly complex psychological phenomena mobilized by sensory excitations arising from any portion of the neural apparatus of the visual system. The psychological mechanisms involved represent the total integrative activity of the mind which includes memory experiences, emotions, degrees of sensitivity, constitutional factors and the intellectual endowments which vary considerably among individuals. Depending on these and other factors including the degree of development of the constitutional factor of natural imagery, the hallucinatory experiences will be simple and crude or elaborate, rich and complex in type."

The complex effects of marihuana have been described by Adams (Science 92: 115, 1940). "First there is a feeling of strength and of well being, followed by some fugacity of ideas, exaggerated emotions and irresistible laughter; pressure of speech and gradually incoherence obtains with blurring of the elements of environment. The confusion increases, time appears slow in passing, perception is distorted, but sight and hearing are acute, and the subject is in a state of increased suggestibility. This is followed by deep sleep. The subject usually remembers his experiences. During the course of the intoxication such unpleasant symptoms as pain, fears of death and destructive tendencies may appear. Excessive indulgence may lead to chronic headaches, loss of resistance to fatigue, interference with work adjustments and other evidence of physical and mental disturbance."

/These are Lewis's words in abstracting Adams./

Psychosomatic medicine is gaining headway. For instance it was recognized that "Thirty-eight of 50 patients admitted consecutively to the G. I. /gastro-intestinal/ clinic of the Johns Hopkins Hospital Dispensary were found to have personality disorders of which digestive complaints were principle symptoms -- in most cases without organic lesions." This was emphasized by Robinson (Bulletin of the Johns Hopkins Hospital 68:203, 1941). Significant observations have also been made by others as to the emotional factors in essential hypertension, the effect of emotions on the movements of the diaphragm and the neurotic character traits of asthmatics.

"The Rorschach test is growing in popularity...." It is used as an aid to psychiatric diagnosis, including both adult and childhood conditions. It also has been used in estimating prognosis and evaluating progress in insulin-treated schizophrenics. /Comment: Irrespective of the theories of the ultimate nature of mind and spirit, the complex and inconstant nature of personality as we know it and deal with it in ourselves and others is brought out in Ichheise's groupings of the real, pseudo and sham qualities of personality.

Current psychiatric theory contends that all hallucinations are entirely subjec-

tive phenomena. Grant indicates the explanations of psychiatry for the various characteristics of hallucinations. If research can produce good evidence of hallucinatory-like visions, etc. which are not strictly subjective in the psychiatric sense, a new field of investigation will be opened.

The complex reaction of the human being to various drugs, in this case marihuana, strengthens the concept that our total personalities as we know them are delicately contingent on internal chemical states. We all have been aware of the instability of the time sense in ordinary changing circumstances, but marihuana exaggerates the time sense changes.

The Rorschach Test is the ink blot test, using a selected group of ink blots. The subject looks at each ink blot and says what images or forms he "sees" in the ink blot. What he sees is conditioned by his complex mind set at the time. Such responses have been classified and correlated to the known personality factors until now a certain degree of evaluation of the personality structure can be made from the Rorschach responses alone. P. H. W.7

#### PROGRESS IN EXTRAMURAL CARE, HEREDITY AND GENETICS.....

In Psychiatry 1941

This field was covered by Dr. Aaron J. Rosanoff, who at 63 is Director, Department of Institutions, State of California, Sacramento, California. He has made a number of contributions to the problem of diseases occurring in twins.

Abstract: The growing number of patients requiring psychiatric attention has overcrowded the mental hospitals even in states where an active building program has been maintained. To overcome this over-crowding more effective preventive measures are needed and more liberal policies as to the parole of patients. ".... for the most part, the question of release for extramural care is a matter of administrative policy and facilities for psychiatric social service." In line with the latter method California has increased the social work personnel from 8 to 36 in two years. The total number of patients in California in extramural care increased from 2,976 to 5,180 during the same period. "There is no doubt that at least 25% of the population of the average mental hospital can be maintained in extramural care with great advantage to all concerned."

The study of neuropsychiatric disease in monozygotic [from one ovum] twins has revealed that only the rarer diseases are produced solely by hereditary factors. Most diseases require additional influences. "A quite unexpected by-product of the psychiatric researches of twins has been the finding of the importance of cerebral birth trauma in the etiology of vast groups of neuropsychiatric conditions -- an importance heretofore never adequately appraised. The principle conditions concerned are: infantile cerebral palsies, epilepsy, mental deficiency, deteriorating psychoses of childhood and adolescence ('dementia praecox'), grave behavior difficulties of childhood which often progress in the direction of chronic delinquency and criminality, and various combinations of these."

Comment: Dr. Rosanoff does not estimate the influence of the more recent active methods of treatment on the hospital population, but in some places the pressure is beginning to lessen due to the successful treatment and early discharge of new cases. The effect of this on statistics will not show up clearly for awhile because part of the effect is to send the patients out of the hospitals in a more normal state than similar patients previously were in at the time of discharge.

Astrology has apparently not been applied sufficiently carefully to twins, one or both of which subsequently develop neuropsychiatric disorders. Modern medical science ever seeks to control the forces at birth to prevent birth injuries of various sorts and is not inhibited by any notion that the stars will aid or prevent him inexorably at that time. P. H. W.7

Electrophysiology (abstracted below) and also epilepsy were discussed by Dr. William G. Lennox who, at 57, is now Visiting Physician for the Boston City Hospital and limits his private practice to the treatment of epilepsy. He has been one of the leaders in the use of the electroencephalogram in the diagnosis of epilepsy. His 1941 book, Science and Seizures: New Light on Epilepsy and Migraine, is very readable, and was discussed in a two column notice by John J. O'Neill, science editor of the Herald-Tribune New York, February 8, 1942. Of interest to us was the item brought out there: "Epilepsy and migraine are so closely related, he finds, that epilepsy could be called migraine of the brain and migraine could be designated as epilepsy of the vegetative nervous system."

Abstract: "The electroencephalogram offers a wonderful opportunity to study the essential activity of the brain, to join cortical discharges with cortical metabolism and analyze their joint mechanism." Considerable work along these lines is in process. Although so-called normal people less often have abnormalities of the "brain waves" nearly 15% do have such changes as yet not adequately explained either by symptoms or by family history. The percentage of abnormal waves "ran about 30% in behavior problem children, about 40% in draftees with a history of head injury, crime, queer behavior, etc., about 50% in relatives of epileptics and about 95% in epileptics themselves." "Presumably prisons harbor many persons afflicted not with moral turpitude but with disordered brain waves which require chemical therapy, or for the protection of society, eugenic prophylaxis. A correlation between the prominence of the normal ten a second waves and various attributes of mind and personality has been attempted...but requires larger material."

Technical Terms: electroencephalogram: tiny variations of the electrical potential of the brain areas are recorded, after amplification, as a tracing of waves measured in millionths of volts or microvolts. These waves usually range from 20 to 100 microvolts in height and occur from 4 to 40 per second. The tracing itself is the electroencephalogram; cortical: refers to the thin layer of gray matter on the surface of the brain. The brain waves come from these surface cell layers; eugenic: means well born; prophylaxis: means preventive measure. Eugenic prophylaxis means any measure which will prevent inferior stock from having children.

Comment: "Brain waves" have absolutely no known connection with anything resembling mental telepathy. Although the reason for these waves is as yet very poorly understood, they apparently reflect certain aspects of general brain, especially cortical, activity, and do not correlate with any thoughts or feelings. P. H. W./

#### NATURE AND STRENGTH OF THE MUSCLE ACTION CURRENT

Biology Item

It is, we believe, only an assumption that the so-called action current of the nerve is identical with electricity. It is true that it is accompanied thereby, and hence the nerve energy can be measured by the parallel disturbance. But at present there is no means of determining identity, only equivalence. The following item from the N. Y. Times, April 3, 1942, arose from the annual meeting of the Federation of American Societies for Experimental Biology, and has reference to muscle cells. (F. K.)

"The first precise and detailed measurements ever recorded of the electrical charge on a single muscle cell were reported by Dr. Ralph W. Gerard of the University of Chicago, in collaboration with Miss Judith Graham and Ray Carlson, at the meeting of the American Physiological Society. The research, regarded as important in that it verifies scientific theories regarding the role of electricity in muscle function, disclosed that a relatively large charge of six-hundredths of a volt exists, making each of the many cells in a muscle a miniature battery, Dr. Gerard said. When the muscle is called into action, the electric potential is lost; thus the stimulation of a muscle consists in momentarily short-circuiting its electrical balance, he explained."

Self-consciousness has a biological background. It is registered in billions of cells that form parts of your nervous system. When some of these cells are injured or destroyed, you lose with them some degree or part of your self consciousness. The nerve cell has many characteristics, chief among these are irritability, conductivity and adaptability. If the cell expends more energy in the day than is given back to it at night, it becomes weaker and from this change in the cell you become increasingly irritable, apprehensive, emotionally tense and impulsive. The lower the energy in the cell, the greater the irritability. The lower the energy the greater the volume of impulses that flow into your consciousness. Sensations become more intense under fatigue. Here is the source of those sensations of which you have become suddenly aware and which fill you with a sense of impending danger. Fear is the emotional response to an uprush of intense bodily sensations that you interpret in terms of danger. Fear - no matter what form it assumes - arises from fatigue. Under the friction of prolonged fatigue, your nerve cells become anesthetized. Any person who reaches this stage of depleted energy and fatigue, is ripe for a fear neurosis.

Associated with every series of thoughts, perceptions and feelings there goes a series of physical changes in the nerve cells of the brain. A pattern is set up which cannot be broken by medicine, rest, baths, or any other physical therapy. The cure must extend simultaneously to body and mind, because fear is both physical and mental. Prejudices, superstitions, fears and gloomy forebodings are part of the psychology of fear. (Your Life. 19, 108-26, March, 1942. A. J. P.)

## FOUNDATIONS FOR A SCIENCE OF PERSONALITY

## Book Notice

A new addition to the group of sciences which are seeking underlying unity is the field of psychiatry. Hitherto its proponents have seemed willing to grope around in the semidarkness of abnormal mentality without apparent effort to relate their findings to those of other sciences, with the exception of medical science and psychology. Those who have tried to analyze personality have broken it up into physiological, psychological and social aspects and then have sought units in these "artificially defined fields." Now Dr. Andras Angyal, M. D., Ph. D. has published Foundations for a Science of Personality. He makes what he calls an holistic approach, an effort to deal with the whole personality at one time, or in analyzing it, to take structural subdivisions instead of mere fractions or abstractions.

Life may be defined as a process of self-expansion which evolves in a definite direction. The process has two phases, the centripetal phase of assimilation and the centrifugal outflow of production. These terms apply alike to physiological and psychological phenomena. Some processes are governed from within the organism, autonomy, and some from without, heteronomy. The trend in evolution is toward autonomy or less dependence upon the environment. But our author goes on to show how organism and environment cannot be separated, that they are interdependent, hence he calls the whole realm in which the life process takes place the biosphere, and the processes within it tensions.

Space, time and fairness to the author forbid further effort at condensation of the material. The terms used are not new in most cases, and those used in the first half of the work are carefully defined so as to have almost universal application. Toward the close of the book, when he deals with the "course of life as Gestalt", Dr. Angyal introduces philosophical terms which are left without definition. However, the work offers a refreshing point of view which one may hope will receive further testing. D. R.

FOUNDATIONS FOR A SCIENCE OF PERSONALITY, Andras Angyal, M.D., Ph.D., Commonwealth Fund, New York, 1941, 398 pages, \$2.25.

